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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,453	11/30/2000	Marco Ebert	00236	9472

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EXAMINER

AFTERGUT, JEFF H

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,453

Applicant(s)

EBERT ET AL.

Examiner

Jeff H. Aftergut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2005 and 07 July 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-32 and 34-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-32 and 34-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 24-32 and 34-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant is referred to the Office action dated April 7, 2005, paragraph 2 for a complete discussion of this rejection. The following comments are supplemental to the previously made rejection and are made in response to the remarks made by applicant and the reference submitted to Mattheij et al. the applicant is advised that it is now better understood what is meant by "tailored fiber placement" and the associated stitching involved in such an operation. The applicant is advised, however, that it is not understood how one can maintain constant volume and constant fiber thickness throughout the entire grid as the nodes would have had twice the thickness as well as twice the fiber volume as the points between the nodes as previously explained when utilizing continuous fibers. It should be noted that the specification does describe the use of tailored fiber placement to form the perform but it does not provide any discussion as to how one utilized tailored fiber placement to achieve constant fiber

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volume and constant thickness. Moreover, the applicant is advised that the specification described:

“The performs are produced in particular by tailored fiber placement (RFP) technology. In this, fiber material unwound from a spool is laid and joined with sewing thread in such a way that a perform of desired geometry is available; different material thicknesses can be attained by stitching repeated layers on top of one another.” (page 4, liens 18-23, emphasis added)

There is not enough information given as to how one employed the stitching operation of Mattheij et al (tailored fiber placement) to obtain a perform having constant thickness. It is not clear from the description identified above whether the “layers” are additional stitching thread or additional continuous fibers. If it is an additional layer of continuous fibers, then when one reached the nodal points one would have had to sever the continuous threads. If it were additional stitching thread between the nodes then it would not provide adequate reinforcement in the direction of the reinforcing fibers. It should be noted that tailored fiber placement as defined by Mattheij et al (and as taken to be what applicant is doing) typically only uses 1-4% stitching thread to hold down the continuous fibers on the base. As such, those regions which were not nodal points would have at least 2-8 % more fiber volume if one made a second pass over the same with the tailored fiber placement device. Note that no second pass is expressly described and the use of a second pass would require the severing and/or cutting of the threads once one reached the nodal point which applicant appears to state was not performed because continuous fibers were used to make the grid and the disadvantage of the prior art was that the fibers were water jet cut at the nodes. It should be noted that applicant argues that there is no stitching thread disposed at the nodes, however, the

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applicant's own specification states that there is stitching at the nodes, see page 5, lines 17-21:

“By the production methods known per se, a perform is made that can have a grid shape; as a result of the laying of the reinforcing fibers and stitching them at the intersection points, a material thickness that is equivalent to the thickness between the intersection points is attainable.” (emphasis added)

Accordingly, applicant has failed to explain how tailored fiber placement was utilized to obtain a perform wherein at the cross over points (nodes) of the grid so formed there was equal fiber volume and equal fiber thickness. Applicant is referred to the previous Office action for a complete discussion of the figures submitted and the manner in which applicant asserted that the fibers were placed.

Applicant is additionally advised that it appears that “tailored fiber placement” as described in the article submitted by applicant to Mattheij et al requires the use of a base fabric or structure into which one stitched to hold the fibers in their desired local to make the specified grid arrangement. The applicant is advised that there is no disclosure as originally filed relating to the use of the base fabric into which one apparently stitched to hold the fibers in place. Additionally, it is not known what happens to the same in the mold. It is unclear whether this base fabric becomes part of the finished assembly or not, but if one was employing “tailored fiber placement” it would appear that at some point in the process one would have had to remove and/or sever the base fabric from the grid formed upon the same. The exact nature of such processing is not known and is not described at all in the specification in order to enable one skilled in the art at the time the invention was made to make and/or use the invention.

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3. Claims 24-32 and 34-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The applicant has added to the claim that the grid is one which is "self supporting", however there is no disclosure as originally filed which expressly states that the grid is "self supporting". Additionally, as described by applicant as well as is described by Mattheij et al, the "tailored fiber placement" operation involved the placement of the reinforcing fibers upon a base via the sewing and/or stitching thread to hold the fibers in place. The grid so formed is therefore not "self supporting" unless one considers the base fabric material to be part of the grid. It should be noted that there is no description of the base fabric in the specification, however one can only ascertain from the disclosure as well as applicant's arguments and the article submitted by Mattheij et al that the processing performed by applicant employed a base fabric material onto which the filaments were placed and secured in position with stitching. As such, the grid itself is not self-supporting as defined but rather requires the support of the base. Additionally, it is not clear what happens to the base fabric in the additional processing performed in the claim.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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5. Claims 24, 26-31, 38, 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckers et al in view of Kam et al, PCT WO 99/22932 and Koury (newly cited, of record) optionally further taken with either one of Kawasaki et al or Blad et al '679 further optionally taken with the admitted prior art as exemplified by the article to Mattheij et al (entitled "Tailored Fiber Placement- Mechanical Properties and Applications", newly cited).

The references to Deckers et al , Kam et al, PCT '932, Kawasaki et al and Blad et al have all been previously discussed in the previous Office action dated 4-7-05. The reference to PCT '932 appears to suggest a suitable tailored fiber placement operation wherein the individual tows were capable of being dropped and added as necessary in order to vary the density of the finished composite and thus is deemed to have been capable of controlling the fiber volume in the finished grid assembly. The reference is a "tailored fiber placement" device in that the fiber placement machine was tailored to provide the specific filament placement on the surface. Regarding applicant's discussion of "tailored fiber placement", applicant is advised that the admitted prior art as described at page 5, line 17-page 6, line 6. the applicant has admitted that the tailored fiber placement process was known per se as evidenced by Mattheij, et al. Mattheij et al suggested why one skilled in the art would have utilized tailored fiber placement for the operation of disposing the fibers in the specified orientation. The applicant is advised additionally regarding the amendment that the references to Kam and Deckers clearly taught that the same was disposed on a shell (and that applicant's "tailored fiber placement involved placement of the fibers upon a base and thus Deckers is just as

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"self-supporting" as the applicant's own grid arrangement). Note that additionally it was well known at the time the invention was made to provide an arrangement of a grid either alone or with a shell assembly as suggested by Koury wherein the assembly was formed in a fiber placement process, see column 1, lines 14-38. clearly, one skilled in the art would have understood that where desired, it was known at the time the invention was made to form the grid structure by fiber placement wherein there was no panel associated with the grid assembly (dependent upon the specific end product being manufactured). Additionally, Deckers suggested the molding operation with the flexible molding elements as defined in the claims (as did the admitted prior art). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the tailored fiber placement techniques of the admitted prior art as exemplified by Mattheij et al in the operation of forming a grid arrangement with the fiber placement device of PCT '932 (which afforded one flexibility in the manufacturing operation) in the process of Deckers et al in order to provide for greater flexibility in manufacturing of the grid assembly wherein one skilled in the art would have provided the grid as a preform assembly prior to final curing of the assembly as suggested by Kam et al and wherein the grid assembly was known to have been formed alone as a self supported assembly as suggested by Koury (wherein the use of a backing panel or the grid alone was recognized as alternatives dependent upon the desired finished assembly) as such would have provided one with a uniform grid which was useful for molding and laminating to other layers in composite article manufacture. Additionally, to provide for uniformity in thickness and fiber volume at the nodes would have been

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understood to have been desirable as evidenced by either one of Kawasaki et al or Blad et al '679 and applicant is referred to the previous Office action for a discussion of the same.

6. Claims 25, 32, 34-37 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with Booth for the same reasons as presented in the Office action dated March 19, 2004, paragraph 7.

7. Claims 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with either one of Handermann or Kent et al for the same reasons as presented in the Office action dated March 19, 2004, paragraph 9.

Response to Arguments

8. Applicant's arguments with respect to claims 24-32 and 34-46 have been considered but are moot in view of the new ground(s) of rejection.

The applicant initially addresses the enablement issue and states that tailored fiber placement was well known as evidenced by the article submitted. The applicant is advised that the rejection is not based on whether tailored fiber placement was known or not but rather it was based upon the lack of a description as to how one would have used tailored fiber placement to form the grid assembly where the nodal points had the same fiber volume and thickness as the remainder of the composite grid with continuous fibers as asserted was performed by applicant. There simply is not enough information provided by applicant as to how this was performed so as to render the

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disclosure enabling (allow to make or use the claimed invention). While tailored fiber placement was known per se as evidenced by the article, the exact manner in which it was used to make the grid with the constant fiber volume and constant thickness is not at all clear and as discussed above was not presented by applicant in such a manner as to enable one to practice the invention.

Regarding the new rejection set forth above, applicant is advised that "tailored fiber placement" appears to require the use of a base into which one disposed the fiber in the placement operation via stitching. There is no mention of a base in the specification or the removal of the same in order to provide a finished grid assembly. Additionally, there is no indication that the grid formed on a base would be "self supporting" as noted by applicant. It clearly required the use of the base employed in the tailored fiber placement operation.

Applicant is advised regarding the prior art rejection that the reference to Koury clearly envisioned the formation of a grid assembly via a fiber placement operation wherein the grid assembly so formed was one which was self-supporting. Applicant is additionally advised that the claimed process of "tailored fiber placement" requires that the fibers be placed upon a base substrate and thus it is unclear whether the same are "self-supporting" as now claimed.

Regarding the use of the molds, the applicant is advised that the use of the resilient molding material was suggested by the admitted prior art as well as Deckers. It should be noted that it was desirable to provide a grid with uniformity in thickness as suggested by either one of Blad or Kawasaki as previously noted and that one viewing

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PCT '932 would have understood that uniformity in volume would have likewise been provided for in a fiber placement operation.

No claims are allowed.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

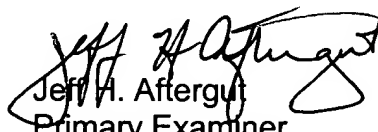
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Thomas Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
August 23, 2005